Darmstadt Discussion Papers in Economics

Demographic Change and Partial Funding: Is the Swedish pension reform a role model for Germany?

Jochen Jagob
Werner Sesselmeier

Nr. 100

Arbeitspapiere
des Instituts für Volkswirtschaftslehre
Technische Universität Darmstadt

FiWi
Technische
Universität
Darmstadt

Demographic Change and Partial Funding:

Is the Swedish pension reform a role model for Germany?

*Jochen Jagob and Werner Sesselmeier**

Darmstadt University of Technology
Department of Economics and Public Finance
Residenzschloß
D-64283 Darmstadt
jagob@vwl.tu-darmstadt.de
sesselmeier@vwl.tu-darmstadt.de

* For helpful comments we thank Barbara Wolfe and the participants of the 7th International Research Seminar on „Issues in Social Security" of FISS in Sigtuna 17th-20th June 2000

Introduction

With the exception of Ireland most OECD countries can be described by a similar demographic development which forces the welfare states to reform their social security systems and especially their pension systems. The populations of all the member states are shrinking and getting older. This holds for Sweden and above all for Germany. Due to OECD figures the share of the ones 65 and over of the total population in West Germany has risen from 10.8% in 1960 to 16.2% in 1997 and it is assumed to double until 2040. In Sweden the rise was the same with 11.8% in 1960 and 17.4% in 1997. The forecasts are very similar to the German ones.
Consequently both countries have reacted on this challenges: Sweden with its pension reform act in 1994 and Germany with its pension reform act in 1999 which passed the parliament in 1997. This distinction is important because in 1998 the government changed and the new one immediately stayed the crucial part of the pension reform, the so-called demographic factor for two years. Instead of this the government discusses a fully-funded second pillar beside the pay-as-you-go system. Since the two main features of the Swedish reform are a generation-specific adjustment and a fully-funded component this paper aims at assessing the relevance of the Swedish model for the German system.
Before we look at the pension systems in Sweden and Germany we discuss several ways of restructuring pension systems more generally.

Restructuring the old age security

In order to prepare a pension system for the demographic change that will arise within the next fourty years several options are possible. These options for dealing with the demographic change can be devided in adjustments within a given pension system and reforms which change the system significantly (similar discussions can be found in Schmähl 1999 and Lindbeck 2000).

Reacting within a given pension system

Within a given system pay-as-you-go system there are three adjustung screws: the contribution rate, the age of retirement and the pension level.

Increasing the contributions

The easiest way to guarantee pension payments to the old in the future can be acchieved by increasing the contribution rate. Though it is the easiest way and it follows the systematic of a pay-as-you-go financed pension system it is not desireable. The arguments against an increase of the contribution rate are by far too substantial and can not be ignored for economic reasons as well as for reasons of intergenerational fairness.

A further increase of the contribution rate will have the consequence of a significant shift of the burden on future generations. Jagob and Scholz (1998) have shown this for the German pension system by the method of Generational Accounting. If such a shift of the burden is considered as intergenerationally unfair an increase of the contribution will not be acceptable as an instrument of pension policy. Besides the pure reason of intergenerational justice as an argument against the policy of a rising contribution rate there are also economic reasons against increasing contribution rate. The most important one is that increasing contribution rates will lead to distortions on the labor market. As Thum and von Weizsäcker (1999) pointed out an increasing contribution rate due to the demographic change will have the effect of an increase of the implicit tax of the pension system. Firstly, this means that the spread between the amount payed into the pension system and the amount that the individual will receive when it retires will enlarge to the disadvantage of the individual. Secondly, this will lead to a widening of the already large tax wedge between the production wage and the consumption wage. The consequences of this are a more aggressive behaviour in the wage setting process and a decrease in the readiness of contribution payments (see Pigeau/Sesselmeier 2000). Since at least in Germany contributions to the pension system are a percentage rate on the wage such a development will create disincentives to take part in the regular labor market. Many workers will therefore decide to step into other kinds of employment like illicit work as one of the most drastic form. This effect which will even aggravate the financial situation of the pension system. Therefore an increase of the contribution rate is not desireable.

As we pointed out there are two kind of arguments against such a policy. One is that such a policy is intergenerationally unfair and the other is that it will create labor market distortions which will even worsen the situation.

Increasing the age of retirement

An increase of the regular age of retirement seems to be an appropriate way to deal with demographic change within any pension system. The increase of longevity over the last decades makes persisting on the current age of retirement implausible. Since people live longer in a quite good health it is more or less a consequence that they also can work a longer time of their live as they do now. This will have an effect on both the revenue and the expenditure side of the pension system. First of all on the revenue side: If people work a longer time of their live they also pay contributions for a longer time. Secondly on the expenditure side: Since people work longer they will receive less pensions. These two effects will improve the financial situation of the pension system. Note that the increase of the longevity has an effect on any pension system regardless if it is financed as a pay-as-you-go-system or as a fully funded one.

The increase of the regular age of retirement is a crucial point for many reasons. As Börsch-Supan/Schnabel (1999) investigated for Germany and Palme/Svensson (1999) for Sweden there is a tendency in pay-as-you-go financed pension systems towards early retirement, which can be found by an increasing average age of retirement and/or a decreasing labor market participation of the age cohorts over 60 years (see for an international comparison Jagob/Sesselmeier 2000a). Their labor market participation was decreasing over the time while their absolut number was not over the same time period and the average actual age of retirement is due to the investigations in both countries substantially lower than the age of retirement by law. Börsch-Supan/Schnabel (1999) took those results as an indicator for wrong incentives within the German pay-as-you-go system. They asserted that this is an argument for a complete transition towards a fully funded system. In fact the decreasing labor market participation of the age cohorts over 60 and as a consequence the decreasing average age of retirement was to a greater extent a result of the governments´s labor market policy than of a voluntary choice of the individuals corresponding to any incentives of the pension system. It might be doubtful if it is the adequate way to (ab-)use the pension system for labor market policy but at least it was one way to deal with the problem of unemployment especially in East Germany after reunification.

One attempt to might be to increase the regular age of retirement as a guideline but keeping the possibility to retire earlier if it is neede or wanted. This flexible age of retirement must be connected with an actuarial fair adjustment as it is more or less

already the case in the German system. The pension paid will therefore be lowered by the factor if an individual retires earlier than the regular age. This will leave the choice about retirement to an greater extent up to the individuals and will make the actual age of retirement much more flexible. As already stated an increase of the age of retirement is one way to improve the financial situation of the pension system as a consequence of the increasing life expectancy. Additionally a flexibilisation of the actual age of retirement connected with an actuarial fair factor could be useful in order to leave room for implicit contracts between the workers and the employers about early retirement and therefore an improvement of the labor market situation.

Decreasing the pension level

The opposite of an increase of the contribution rate would be a decrease of the pension level. Since the contribution rate is determined by the expenditure side a decrease of the pension level will have a stabilizing effect on the contribution rate. A decrease of the pension level can be achieved in different ways. The easiest one is by determining it exogenously to a specified value. Another way is an endogenous adjustment of the pension level. This adjustment can be acchieved by a demographic factor (see also Rürup 1998).

This factor works insofar as it decreases the pension level to a certain extent as the life expectancy rises. Such a factor may be shaped in two different ways. One way is to adjust the pension level by the overall life expectancy. The consequence of a such a factor would be that the costs of an increasing life expectancy would be distributed on both those who are allready retired and those who still pay contributions. The other way would be a cohort specific adjustment. This means that every cohort that retires will have a different pension level according to their own life expectancy at the year when they retired. This is depicted graphically in the Figures 1 and 2.

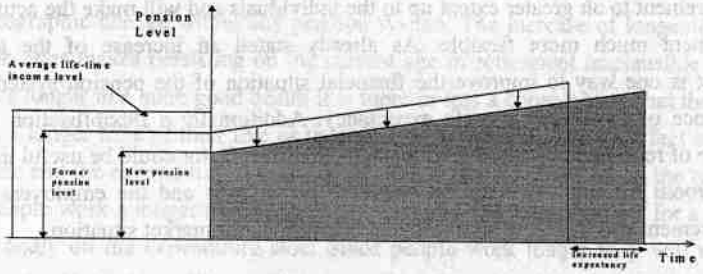


Figure 1: cohort-specific adjustment and its effects on the amount of pensions

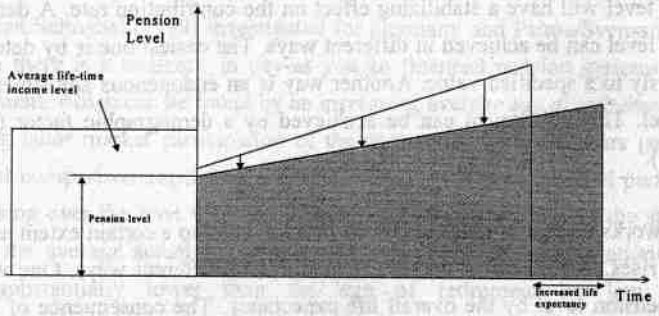


Figure 2: overall adjustment and its effects on the amount of pensions

The question which of those two possible ways is the appropriate depends on the consideration about what is regarded as fair. On the one hand it could be regarded as fair to spread the costs of an increasing life expectancy equally on every member of the (insured) society. This is especially the case if the pension system is regarded to a great extent as an important part of the social security system. On the other hand it could regarded as fair to impose the costs of an increasing life expectancy on those who cause the costs. This point of view follows more the insurance principle as it is practiced on private markets.

So far we investigated three possibilities to stabilize a pension system. They all had in common that they were options which work within a given pay-as-you-go-system. But there are other options which need to be discussed. Most importantly a transition towards a mix between a fully funded and a pay-as-you-go system.

A Mix between a Fully Funded and a Pay-As-You-Go System

Many economists favour a complete transition from a pay as you go system towards a fully funded system even though Breyer (1989) as well as Fenge (1997) have shown that a Pareto-efficient transition is impossible. Our point of view differs in this regard. We doubt that a complete transition towards a fully funded system is the perfect remedy for the pension systems in general, mainly because there are risks within a fully funded system itself as well. The most important reason against such a transition are the resulting burden for the working generations during the transition period. This burden is a result of the compensation needed for those who already did retire but do not get any or not enough benefits out of the new fully funded system. Even though for Germany most calculations are just based on the costs which are a direct result of the compensations, i.e. they neglect any distortions due to this kind of taxation and can thus barely be considered as a lower limit of the costs, the amount of the net present value of the compensation payments seems to be high enough. This tax which is levied for the compensation payments will have the effect that the disposible income of the individuals will be reduced. As a consequence the households may reduce their savings and the economy will therefore have lower overall savings.

The second reason why a complete fully funded system is not the right way to deal with the demographic problem is the widely spread misbelieve or myth, as Orszag and Stiglitz (1999) call it, that a fully funded system is not affected by the demographic change. In fact a fully funded system is not independent of the demographic change. On the one hand a continously rising life expectancy will have an effect on the pensions as well if the retirement age stays on a fixed level and on the other hand the rates on returns will be reduced as well when the baby boomers will retire. The latter point has been pointed out by Heller (1998) and especially by Brooks (2000) in much more detail. The argument is pretty simple because the assets which are hold by the baby boomers have to be sold when they retire. Since the number of buyers is by far less then the number of sellers one can expect the prices to fall. As an effect the baby boomers will receive much less for their assets as usually assumed.

These are the most important reasons why a complete transition towards a fully funded system is not desireable. But there are good reasons to add fully funded elements to the mandatory pension system. These are mainly two. One is the lack of human capital in the future which is a result of the low fertility rates today (see Sinn (1999a, 1999b)). The second reason can be seen as a form of risk hedging. Since both systems have a different kind of risk structure both systems can complement each other. Furthermore each empirically given pension system is pathdependent not only in its economic consequences but also in generating socio-economic norms (see Bohn 1999 and Miles 2000 for elaborated studies on some kind of optimal mix of a pay-as-you-go system and a funded one).

Pension Reform Options – A Comparison between Sweden and Germany

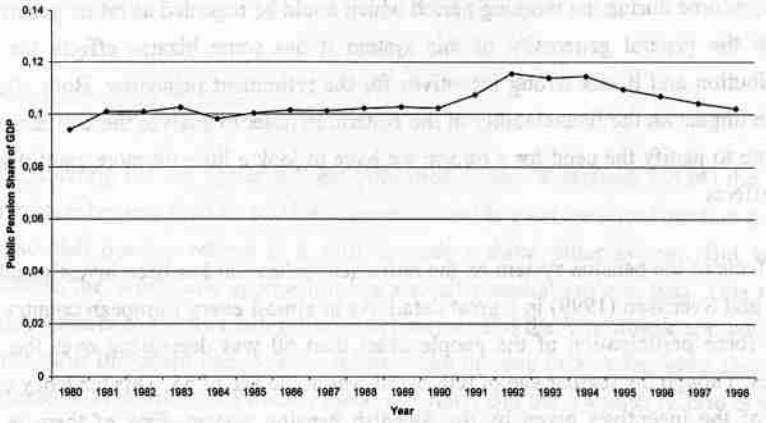
As everybody can easily imagine if the demographic change will occur as described a need for reforms is unavoidable both in Sweden and in Germany. In both countries different changes in the pension policy were discussed and resulted in two different reform approaches. The Swedish approach which to a great extent also got applied in Latvia (see Fox and Palmer 1999) is based on a cohort specific demographic adjustment of the Pay as you go financed pension and an additional funded fraction. On the opposite the German Pension Reform Act of 1997 which got suspended by the current government intended an overall adjustment of the general pension level by the life expectancy of the elderly. In order to get a better understanding in the differences and the consequences of each of those approaches to deal with the demographic change the intention of both reforms will be explained in the following chapters.

The Swedish Pension System

After World War II Sweden became a synonym for a modern Welfare State. It showed that a high level of social security does not conflict with the principles of a market economy. During the years of prosperity with both positive economic and population growth this approach proofed to be sustainable. As it comes to the pension system it can be seen in Figure 1 that since the 1980s the Swedish pension system had a rather

high expenditure per GDP ratio. Approximately every tenth Swedish Krona was spent for the pension system.

Figure 3: Public Pension Share of GDP in Sweden



As the years of prosperity came to an end the Swedish government realized quite early that a social policy on a high level like that could not be continued. In the year 1984 a commission was therefore founded by the Swedish Government in order to work out a reform plan for the Swedish Pension System (see also Persson 1998). This reform plan was presented to the Parliament in the year 1994. The need for a fundamental reform became more and more urgent since in the early 1990s a recession affected the Swedish economy. The result of it was besides a high unemployment and a substantial depreciation of the Swedish Krona that the conservative government under the Prime Minister Karl Bildt tightened their fiscal policy. One effect of this tighter fiscal policy can also be seen in Figure 3 by a small decline of the pension expenditure per GDP ratio. In order to demonstrate the effects of the Swedish pension reform we will first give a short insight into the Swedish Pension system before the Reform and afterwords we will investigate the Reform and its consequences in a greater detail.

The Pension System Before the Reform

The Swedish Pension System before the reform was divided into two parts, the National basic Pension and the National supplementary pension (ATP). Both of them

were financed at least to the main part as a pay-as-you-go-system. According to Ståhlberg (1995) the Swedish system was built on two principles. On the one hand there is the flat-rate National Basic Pension System which covers the basic needs after retirement. On the other hand there is also the National supplementary pension system which is a defined benefit system. Its benefits are based on the 15 years with the highest income during the working period which could be regarded as rather generous. Besides the general generosity of this system it has some bizarre effects for the redistribution and it sets wrong incentives for the retirement behaviour. Both effects have an impact on the financiability of the system. In order to analyze these effects and therefore to justify the need for a reform we have to look a little bit more carefully on these effects.

The effects of the pension system on the retirement behaviour has been investigated by Palme and Svensson (1999) in a great detail. As in almost every European country the labour force participation of the people older than 60 was decreasing over the last decades. Though the regular age of retirement was at the age of 65. This tendency is an effect of the incentives given by the Swedish pension system. One of them is the dependency of the benefits on the 15 best earning years. This makes it attractive to retire earlier compared to a system where the pensions are related to the lifetime-income as in Germany. The reason for this is that in a system like in Sweden the loss due to a earlier retirement is much less or even nil compared to a system like in Germany. Since there is no loss due to early retirement it is not rational to stay in the labour force. Therefore it seemed to be necessary to connect the benefits in the Swedish pension system more to the lifetime-income and/or adjust the pension payments in so far as the pensioner does receive a lower pension when he retires before the regular age of retirement. Besides this incentive effect of the benefits the Swedish system was faced to a substantive demographic change which is to the main part a result of the increasing life expectancy of the 60 year old. The increasing life expectancy is a crucial element for the financiability of the Swedish system since it is already on high level compared to other OECD countries (Palmer 1999a). In order to get the pension system into an financial sound situation the system has to be reformed, where the main starting-points for a reform should be the handling of the increasing life expectancy and the actual age of retirement.
Another effect of the old system was regarding to Palmer (2000) that the pension system had rather undesired redistribution effects. The redistribution was insofar undesired because it was unfair which means that it transferred income from those

with lower earnings to those with higher earnings. Finally the old system did not react appropriately to economic growth, i.e. high economic growth was not reflected in higher pensions at a nearly similar rate. As we can see there were several reasons why the public pension system had to be changed. In the next chapter we will look at the reform and investigate how it copes with these problems.

The Swedish Pension Reform

Since „Averting the old age crisis" got published by the Worldbank (1994) the three pillar system became the key word whenever it came to a debate about pension policy. The Swedish pension reform is a shift towards a three pillar system. But in the opposite to the Worldbank approach it has a smaller capital covered part. This is not the only difference the Swedish reform has compared to the Worldbank approach but it is the most important one. Similar reforms like the one in Sweden have also been introduced in countries like Latvia, Poland and Italy. But the Swedish reform is still a quite drastic change in social policy. Though a guarantee pension as the National Basic Pension was maintained but when it comes to the Sublementary Pension the direction of social policy moved much more towards the insurance system. This means that ex ante redistribution is completely left to the tax-/transfer-system, i.e. the government budget, while the supplementary pension system is now based on the actual contributions paid. In other words, the reform leads to a strict separation of the insurance system and the redistribution as a means of social policy. In this chapter we will therefore look at the reform in greater detail and show how the contribution and pension payments are determined.

One major change of the pension system is the switch from a defined benefit system to a defined contribution system. In the old system the benefits were related to the income of the 15 best earning years. The net replacement rate amounted to about 60% plus an additional 10% out of an occupational scheme. The yearly revenues of the system depended therefore on the expenditure in the same year. In contrast to this type of defined benefit system the new system after the reform will be a defined contribution system, i.e. a system with a fixed contribution rate at 18,5%. Besides that change the new system will be splitted into a pay as you go part and a fully funded part. Where 16% of the 18,5% contribution rate are for the pay as you go part and 2,5% are the fully funded part. This means that the new system is a hybridsystem with

a fully funded and pay as you go part and it has a contribution rate which is fixed at 18,5% of the income. Additionally to the mandatory Public pension system many employees are also covered by an occupational pension scheme that is providing a coverage up to a rate of approximately 2% of their working income. The relevant question which has to be answered now is, how are the benefits calculated?

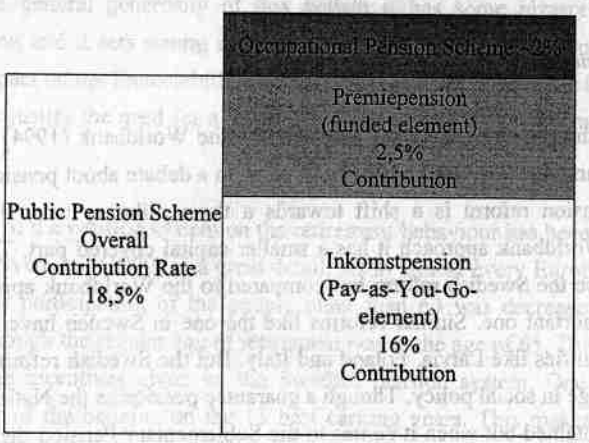


Figure 4: Contribution Payments in Sweden

First of all the pension payments in the new system will depend on the age of retirement. The reform made it possible for the workers to choose their own retirement age within the range from 61 to 65.[1] This means that the regular age of retirement is not as rigid as it was or as it more or less still is in Germany. But there is an incentive to postpone retirement insofar as the pension depends on a so called divisor which reflects the life expectancy of an individual at the age when she retires. At least for the pay as you go financed pillar the individual pension can be calculated as follows. Every worker pays a contribution of 16 % on a notional account. Notional means that the money the employee paid on the account will not be invested on the capital market but paid out immediately to the pensioners as it is usual for every Pay as you go system. But the pension the employee will receive after he retires is based on these contribution payments wich are on the account. They get adjusted by the general

[1] It is actually possible to postpone retirement after the age of 65. Since the demographic factor is based on the life expectancy at the age of 65 any postponement will not increase the monthly pension paid. But on the other way round any retirement before the age of 65 will definitely decrease the monthly pension.

growth rate of the wages. At the end there is an accumulated and growth adjusted amount which gets divided by the divisor. The divisor reflects the life expectancy of every cohort, that retires at the age of 65. The demographic adjustment is therefore in contrast to the German one not an overall adjustment but a cohort- specific one. The divisior is according to Palmer (1999b) given as:

$$(1) \qquad G_{i,r} = \frac{\sum_{i=i}^{N} (1+r)^{-(N-i)} lx_i}{lx_i},$$

where r is the real rate of return and lx is an expression for the survival probability of a person in a certain age. The G-value can be obtain if we are summing over all lx-values for which people are presently alive, N, and by dividing it with the lx-value for the age cohort under consideration (see Palmer (1999b)). The annuity, A, for every individual retiring is than calculated by dividing the amount accumulated on the notional account over the time, C, with the divisor G:

$$(2) \qquad A_{i,r} = \frac{C_i}{G_{i,r}}$$

Since the factor G reflects the remaining life expectancy of an individual belonging to a special age cohort exactly at the age of retirement it can easily be seen that an earlier retirement reduces the annuity of the individual. The effect of a system like this will be that there is a incentive for the individual to postpone retirement until the regular limit at the age of 65. The annuity that an individual receives calculated as in equation (2) gives the pay as you go pension. But the individual receives additionaly a funded pension which consists of the 2% of her income she is paying into a private fund during her working period plus interest.

As far as our investigation goes, we can summarize that there are four substantial changes of the Swedish pension system which are of economic relevance. First there is a switch from a defined benefit system to a notional defined contribution system. Secondly the Pay as you go pension system gets enlarged by an additional funded system. Thirdly the age of retirement is flexible insofar as the individual can choose within a range between 61 and 65. And last but not least the individual level of a pension for a member of a special age cohort will depend on the average life expectancy of his age cohort. This will have two effects. On the one hand

there is an automatic stabilizer of the system and on the other hand there is an incentive to postpone retirement.

The German Pension System

The Pension System before the Reform

A statutory old age insurance system can be organized in very different ways and according to different principles. It can be financed through the tax system or from contributions, it can be conceived as a "benefit" system or as a "provision" system which serves to alleviate poverty or it can have a living standard security function as a security aim, and it can be in the form of compulsory insurance or be organized subject to compulsory insurance. There is no one "system" – in the sense of an universal design – of statutory old age insurance in Germany. Rather, there is a large number of very different historically founded old age insurance facilities – in respect of organization, class of insured, benefit and financing – which – with the exception of farmers' old age insurance which only represents basic insurance – have in common the fact that they have the aim of providing living standard security, in the sense that a certain income level during the working life should be maintained in retirement.

Old age security system	**Pensions 1998**	**Share**
Statutory pension insurance	DM 353 billion	86.8 %
Civil servant provision	DM 34,5 billion	8.5 %
Additional provision for public servants	DM 11 billion	2.7 %
Farmers old age insurance	DM 5,2 billion	1.3 %
Occupational provisions	DM 3 billion	0.7 %
Total :	**DM 406,7** billion	**100.0 %**

Table 1: The share of the old age security systems of the legal provision for old age (measured according to volume of benefits)

The most important old age security system in Germany – from which about 70% of all old age income originate – is the Statutory Pension Insurance. Statutory Pension Insurance is a pay-as-you-go provision system organized as statutory compulsory insurance in which pension-scheme entitlements are based on the amount of the insured income, i.e. it depends on contributions made. The members, subject to

compulsory insurance, of this insurance scheme are basically all salaried employees, with the exception of civil servants, judges as well as temporary and professional soldiers. Since entering into compulsory insurance is connected to the employment situation, the self-employed are on principle not subject to compulsory insurance.

The contributions – currently 19.3 % - which must be paid equally by the employer and the employee are charged on the wages of the members up to the income limit (~ double the employee income). The number of members of compulsory insurance is currently just short of 28 million people. Out of these, approximately 27 million are in employment subject to compulsory insurance and 160.000 are mandatorily insured self-employed. The payments of the Statutory Pension Insurance and the Social Miners' and Mine-employees' Insurance can fundamentally be split into pension payments (incl. of payments for health insurance for pensioners of about DM 350 billion in 1998) and rehabilitation payments (1998: approx. DM 7.6 billion); that will, however, not be examined in the following.

It can be seen in Figure 5 in the 1970s there was a strong increase in the expenditures of the pension system. Measured as per GDP ratio it rose for nearly 3%. During the 1980s it was rather stable and since the beginning of the 1990s it is continually climbing up to nearly 8% again for West Germany and nearly 9% for Germany as a whole. Especially in Eastern Germany this is due to a labour market orientated policy of early retirement.

Legislature differentiates between old age, disability and surviving dependents' pensions. The *old age pension* may be divided as follows:

Normal old age pension. The pre-condition for the entitlement to this pension is simply to reach the normal old age pension age of 65 years and to fulfil the general qualifying period of 5 years.

Old age pension for long-term insured. The insured may take an old age pension before reaching their 65th year if they have reached the age of 62 years and have fulfilled the qualifying period of 35 years.

Old age pension for the severely handicapped. The insured are entitled to this pension from their 63rd birthday – after a qualifying period of 35 years - if they are recognized as being severely handicapped.

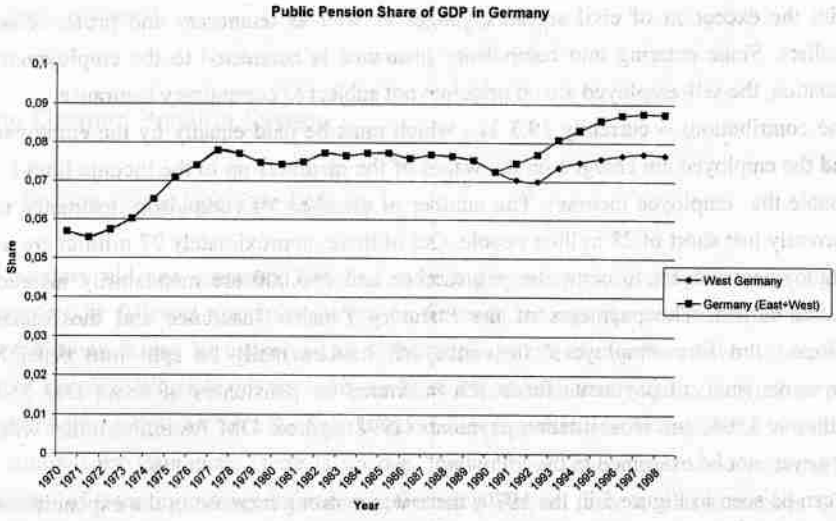


Figure 5: Public Pension Share of GDP in Germany

In comparison with this development in Sweden one can see that the relative costs of the public pension system is lower in Germany but that it is steadily rising in the last ten years whereas in Sweden it is continually falling.

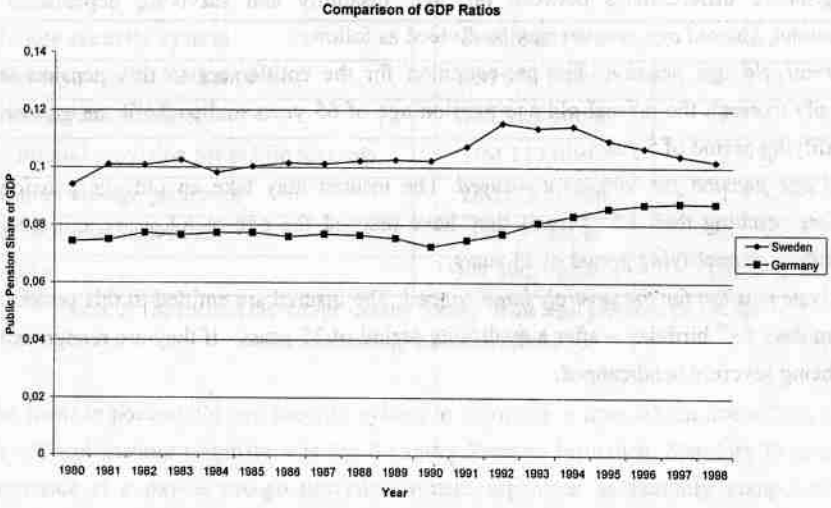
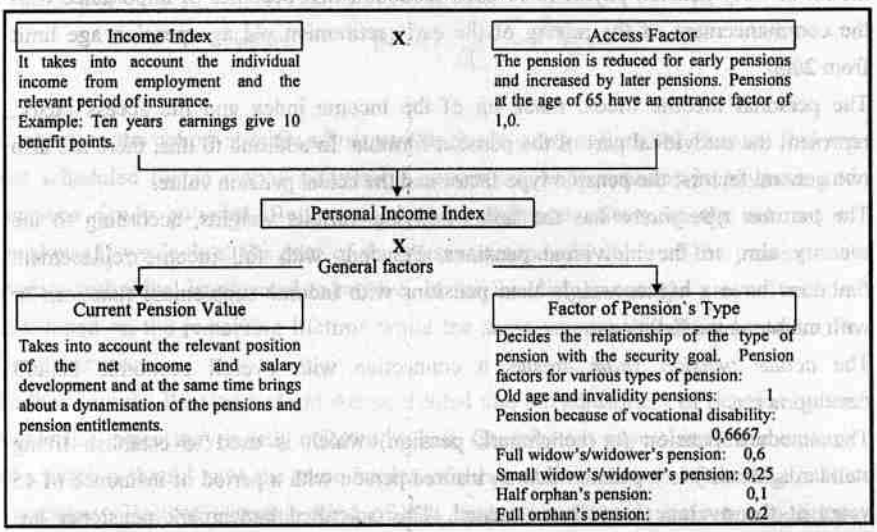


Figure 6: Comparison of GDP Ratios between Germany and Sweden

The amount of the monthly pension to be paid is calculated according to the annual benefits accrued by the contributions during the life of the insured. In addition, account is taken of the time of entry into the pension scheme and of the type of pension.

In accordance with these various grounds for the payment of a pension, the amount of the pension is calculated based on the following pension formula, which is valid since 1992:

The Pension Formula



The *income index* is determined on the basis of the relationship between the personal benefit achieved in a calendar year and the benefit of all insured. It therefore takes into account individual contributions made and the length of insurance. The insurance period is usually longer than the period in which contributions were made. Thus, for example, contribution-free periods would be taken into account if they serve to compensate for times it was not possible for the insured to work subject to compulsory insurance. One makes a differentiation between fictitious qualifying periods (e.g. military and civilian service), credit periods (e.g. disablement, rehabilitation, bringing up of children, occupational training periods) and attribution periods (in respect of inability to work and inability to follow one's occupation pensions). There are extremely varied regulations in respect of the compensation and valuation of contribution-free periods. In addition to the contribution-free times there are also

allowance periods (bringing up of children and caring) and contribution reducing periods. Periods of unemployment belong to both the contribution reducing and the contribution-free periods.

The *access factor* is set according to the time of the insured's receipt of the pension. It reduces the pension in respect of early retirees and increases it in respect of late retirees. In respect of a claim to an early old age pension, the pension is reduced by an entrance factor of 0.003 in respect of each month earlier than the relevant, definitive age limit. This corresponds to a reduction in the pension of 0.3 % (3.6 % p. a.) for each month of early pension payment. Pension reduction first becomes of importance with the commencement of the raising of the early retirement old age pension age limit from 2000.

The personal income index, made up of the income index and the access factor, represent the individual part of the pension formula. In addition to this, there are also two general factors: the pension type factor and the actual pension value.

The *pension type factor* has the task of giving various weights, according to the security aim, to the individual pensions. Pensions with full income replacement functions have a higher weight than pensions with income supplement functions or with maintenance functions.

The *actual pension value* creates a connection with overall economic benefit developments.

The standard pension (or benchmark pension) which is used to establish living standards security is a pension that an insured person with a period of insurance of 45 years at the average wage has attained. This so-called benchmark pensioner has thereby made 45 benefit points. The pension type factor amounts to 1.0. Together with the actual pension value of 48.29 for West and 42.01 for East Germany a gross monthly pension of about DM 2,144 (West) and DM 1,839 (East) is calculated. After the deduction of the contributory share for health and nursing insurance one receives a net standard pension (at the amount of DM 2,007.90 for West and DM 1,741.11 for East Germany). The net standard pension is related to the net employed income of all insured and from this the net benchmark level of 70 % is arrived at.

The possible Pension System after Reform I

The Federal government, which lost power in 1998, wanted to reduce the cost of the system with a demographic factor. The intention of the demographic factor was relating the reduction of the pension level to the development of the life expectancy.

Exept the demographic factor DF_t the Pension formula is the same as described before. It consists of the Income Index IP_a, the Access Factor AF, the current Pension Value cPV_t and the Factor of Pension`s Type PT. The only difference is that the individual monthly pension will be adjusted by an overall demographic factor DF_t which takes account of the development of the average life expectancy LE :

$$(3) \qquad R(t) = \sum_{a=0}^{A} IP_a \cdot AF \cdot cPV_t \cdot PT \cdot DF_t,$$

$$\text{where} \qquad DF_t = \left(\frac{LE_{t-2}}{LE_{t-1}} - 1 \right) \cdot \frac{1}{2} + 1$$

Contrary to the cohort-specific adjustment in the Swedish reform the Pension Reform Act scheduled for an overall adjustment concerning both pensions in payment and pensions newly awarded. Both methods have different effects on the amount of pensions. If we look at the sum of the present discounted value of the pensions an average individual is expected to receive in the Swedish system the amount will be distributed on the remaining lifetime while the same amount will be reduced in the German system.

Furthermore the Pension Reform Act scheduled that the adjustment of pension by the higher life expectancy is only effected by half. Contribution payers and the recipients of a pension should have the same burden of these additional costs of the higher life expectancy. Besides a certain kind of just impression there is only one politico-economic reason for this division: Without it the pension level would decline from 71% to about 62% of the net earnings (Rürup 1998, 290) which seemed not to be acceptable for the former government.

The second crucial measure of the Pension Reform Act is a kind of actuarial fairness as reaction to the costs of early retirement. Although the incentives for early retirement were not as high as in the Swedish pension system there was a huge fraction of workers retiring before the normal age of 65 (see Jagob/Sesselmeier 2000b). As mentioned in the pension formula this actuarial fairness reduces the pension in respect of early retirees and increases it in respect of late retirees. In respect of a claim to an early old age pension, the pension is reduced by an entrance factor of 0.003 in respect of each month earlier than the relevant, definitive age limit. This corresponds to a reduction in the pension of 0.3 % (3.6 % p. a.) for each month of early pension payment.

This one and other measures of the Pension Reform Act of 1999 (for an overview see Götz et al. 1998) are still effective whereas the demographic factor is temporarily cancelled by the federal government.

The possible Pension System after Reform II

The present Federal government replaced the demographic factor through a two-stage pension increase not according to wage development as foreseen but only according to the rate of inflation, i.e. of 0.6 % in 2000 and (so far) 1.3 % in 2001. The consequences of this inflation targeting is a rather fast decline of the pension level from 71% in 1999 down to under 68% in 2001 and then staying slightly over 68% over the next thirty years. Therefore the pension would remain on a higher level as regarding to the demographic factor which would have led to about 64%.

Additionally a capital covered provision is discussed which should supplement the pay-as-you-go system with its then reduced benefits. Due to the government this should be a compulsory saving; a certain amount of the (gross) wage should - up to the income threshold - be invested into a portfolio of different investment kinds which has to fulfil certain minimum requirements, i. e. has to secure a long-life income, to secure and make calculable the future benefits and to return the paid contributions (see Greisler 1999).

The obligation of a private capital covered provision is required if the state wants to secure the "standard of living" despite the necessary reduction of the pay-as-you-go system. As, for information economic reasons, a statutory compulsory (pension) insurance is useful (see e. g. Wellisch 2000, 251-255) in order to counter the problem of adverse selection and thus to achieve a better situation for all persons, a compulsory insurance is - at least - also necessary for a capital covered additional provision, as and if the state is no longer able and willing to maintain the standard of living during the old age by the Statutory Pension Insurance alone but adheres to the objective of a state secured standard of living. The overall standard of living provision for the target group can be effected only by means of an "obligatory" percentage. The development of the capital covered self-provision does, consequently, not primarily mean a "price reduction" for the pay-as-you-go system but rather the reach of the welfare state's protection. If the state does not want to accept "provision gaps" it must make the additional provision, i. e. the old age provision saving mandatory. If these funds are saved on a voluntary basis, the securing of the standard of living is no longer left to the state but, as the case may be, to other preferences of the individual person.

Besides this, an obligatory percentage (a certain percentage of the gross wage) will, during the implementation period and a net wage orientation of the pensions, have a sedative effect on the pensions' development and thus the contributions. As the pensions will (with the exception of the years 2000 and 2001) be oriented according to the net wage development of the preceding year, pension increases would be lower without having to lower the net pension level. This way, the pensioners would contribute to the financing of the capital covered provision's development.
Due to the obligatory percentage the contribution rate's increase which is inevitable because of the demographic development will be maintained at a low level.

The possible Pension System after Reform III

The echo coming from the media and the opposition about this mandatory second pillar was so negative that the federal government launched a new pension reform. This third reform again is a combination of the statutory pension insurance constituting the first pillar and a second fully-funded pillar. The crucial difference between the current plan and the former one is that the second pillar is now merely voluntary instead of being mandatory.
Starting in 2001 people are supposed to pay into fully-funded saving plans starting with a rate of 0.5% of gross wage which is getting increased year by year by 0.5% up to 4% in 2008. Because it is not mandatory the government has to provide some other incentives to make the people join this program. First both wage earners and salaried employees will be entitled to receive a saving subsidy up to DM 400 a year, provided their yearly taxable income did not exceed DM 35,000 for single earners and DM 70,000 for married couples. Only those saving plans would be subsidized which assured a sustained income in old age and which guaranteed the return of at least the sum which was invested. The second incentive is much stronger because the reform plan also envisages a reduction in the level of future retirement entitlements paid by the statutory pension insurance. This reduction is necessary to hold the contribution rate constant at about 20% in 2020 and 22% in 2030. Technically the reduction works through an additional so called "balancing factor" by which the pension formula will be multiplied.
This balancing factor (BF) combines the pension out of the PAYG system (PP) with the pension resulting of the fully-funded pillar (CP) in the following way:

(4) $BF = (PP - 0.5\ CP) / PP$

where $CP = CP(i, t)$

with i = interest rate

t = period until getting a pension.

The consequences of this balancing factor on the pension level out of the statutory pension insurance and on the pension level on the whole depend crucially on the estimated interest rate and on the period t between the start of a private savings backed plan and retirement.

The longer the investment period and the higher the interest rate, the lower the level of the statutory pension benefit and the higher the overall pension level. Starting from a pension level of 70% of the net wage in 2000 an interest rate of 4% will lead to a PAYG pension level of 64% respectively an overall pension level of 72.5% of the net wage in 2030 or to 60% respectively 77% in 2050. Taking an interest rate of 5.5% the levels amount 62% respectively 74% in 2030 or 54% respectively 82% in 2050 (see Fig. 7).

What has changed dramatically is the role of the government for securing individuals' standard of living. In this latest variety of the pension reform the responsibility for it changes. Now the individual person itself is responsible for securing its standard of living. For more than the last 20 years people were used to a pension level out of the statutory pension insurance of 70% of the net wage or more (see Fig.8).

A more serious problem results from the construction of the statutory pension insurance. As already mentioned it is wage-related and aimed to secure the standard of living, but there is no minimum pension. Thus low-wage-earners who are not able or not willing to invest in private saving plans run the risk of getting a pension below the subsistence level. Therefore they have to ask for additional social assistance – a possibility which is not very well-known.

Development of pension levels

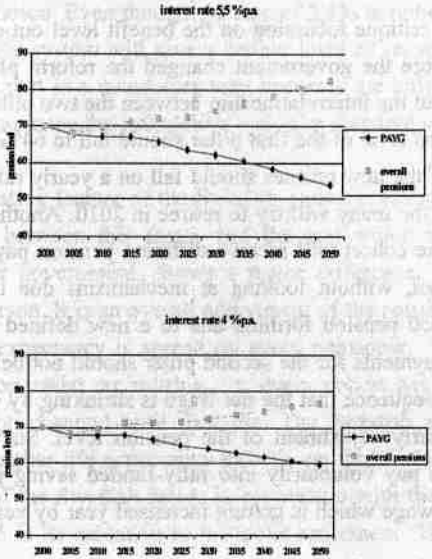


Figure 7: Estimation of pension levels 2000-2050

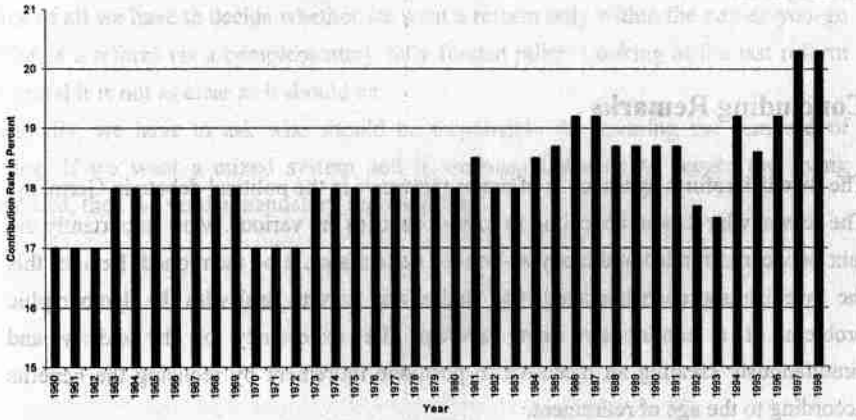


Figure 8: Pension Level in Percent of the Net Wage 1957-1997

Again their was huge critique focussing on the benefit level out of the pay-as-you-go pillar in 2050. Therefore the government changed the reform plams one more time. Most important they cut the interrelationship between the two pillars via the balancing factor. Now the pension level of the first pillar should fall to 64% in 2030. From 2011 on the benefit level of the new retirees should fall on a yearly rate of 0,3%. This will surely have the effect the many will try to retiree in 2010. Another effect will be that people within the same cohort will receive different pension payments whether they will early retire or not, without looking at mechanisms due to actuarial fairness. Additionally a modified pension formula due to a new defined net wage should be introduced in 2002. Payments for the second pillar should not belong to the net wage anymore with the consequence that the net wage is shrinking by definition and so the foundation for the yearly adjustment of the pension level. Starting in 2001 people again are supposed to pay voluntarily into fully-funded saving plans starting with a rate of 0.5% of gross wage which is getting increased year by year by 0.5% up to 4% in 2008.

The main difference to the former reform plan is that the state now is responsible for securing the standard of living again. We do not want to discuss whether 64% of a former net wage are enough to secure the standard of living or not. But if the government think that it is enough why should it subsidize an additional and voluntary funded pillar?

Concluding Remarks

The Swedish reform approach is of major relevance in the political debate in Germany. The reason why it is so appealing to many countries are various. Most importantly the mix between a funded and a pay-as-you-go system should be mentioned. Besides this the Swedish approach managed it to find a way how to deal with the demographic problem of a continously rising average life expectancy of the elderly and simultanously creating an incentive to postpone retirement by reducing the benefits according to the age of retirement.

The relevance of this approach can be seen to the main part in the partial funding. As in every country where pensions are financed by a pay-as-you-go system the demographic change in Sweden and Germany does affect the sustainability of pension

policy. Undoubted reforms became necessary in both countries. The interesting point about the Swedish pension reform is that they managed it to get such a mandatory partly funded system started. Even though the rate of 2,5% is rather arbitrary – as any other rate would be – the system will give a certain level of security. Organizing this additional fully funded part in a mandatory way becomes the only solution if the aim of social policy is to guarantee the individuals a similar standard of living as they had before.

The second very interesting feature of the Swedish pension reform is its demographic factor. A comparison between this factor and the one which was intended to be installed by the former government, shows a major difference. The German factor affects every retired person. It is an overall adjustment of the pension level and the the costs on a higher life expectancy is spread on every pensioner. The Swedish factor affects only those cohorts who are retiring, i.e. every cohort has a different pension level which will not be changed until they die. The Swedish system does insofar impose the costs of a higher life expectancy directly on those who cause the costs. A second positve effect of the Swedish factor in connection with the flexible retirement age between 61 and 65 is its incentive to postpone retirement. The advantage of the Swedish system is the wider range for early retirement and therefore the greater scope for labour market policy. On the contrary the advantage of the German system is that it rewarding those who work longer than the age 65.

What can we learn for the German discussion?

First of all we have to decide whether we want a reform only within the pay-as-you-go pillar or a reform via a complementary fully funded pillar. Looking at the last reform proposal it is not as clear as it should be.

Secondly, we have to ask who should be responsible for securing the standard of living. If we want a mixed system and if we want the state to secure the living standard, then we need a mandatory second pillar.

References

Bohn, Henning, 1999, Social Security and Demographic Uncertainty: The Risk Sharing Properties of Alternative Policies, NBER Working Paper 7030, Cambridge/Mass.

Börsch-Supan, Axel, Reinhold Schnabel, 1999, Social Security and Retirement in Germany, in J. Gruber and D. Wise (eds.): Social Security and Retirement around the world, pp. 135-180, The University of Chicago Press

Breyer, Friedrich, 1989, On the Intergenerational Pareto Efficiency of Pay-As-You-Go Financed Pension Systems, Journal of Institutional and Theoretical Economics, 145, 643-658

Brooks, Robin, 2000, What will happen to Financial Markets when the Baby Boomers retire?, IMF Working Paper 00/18

Fenge, Robert, 1997, Effizienz der Alterssicherung, Wirtschaftswissenschaftliche Beiträge, Band 149, Physica Verlag, Heidelberg

Fox, Louise, Edward Palmer, 1999, Latvian Pension Reform, Social Protection Discussion Paper No. 9922, Washington D.C., World Bank

Götz, Marion, Helmut Stahl, Frank Wollschläger, Neuregelungen bei den Altersrenten, Deutsche Rentenversicherung 1-2/1998, 2-9

Greisler, Peter, 1999, Mittel- und langfristige Entwicklung der privaten Vorsorge, in: Cramer, J. et al. (eds.), Handbuch Altersvorsorge, Frankfurt am Main, 1011-1023

Heller, Peter S., 1998, Rethinking Public Pension Reform Initiatives, IMF Working Paper 98/61

Jagob, Jochen, Oliver Scholz, 1998, Reforming the German Pension System: Who wins and Who loses? A Generational Accounting Perspective, Discussion Paper in German Studies IGS98/12, Institute for German Studies, University of Birmingham

Jagob, Jochen and Werner Sesselmeier, 2000a, The Interaction of the Labour Market and Pension Systems – An International Comparison, in: Jun Young Kim/Per Gunnar Svensson (eds.): Domain Linkages and Privatization in Social Security, Ashgate (erscheint demnächst)

Jagob, Jochen, Werner Sesselmeier, 2000b, Vorruhestand versus Altersteilzeit als strategische Optionen betrieblicher Restrukturierungsprozesse, in: Rainer George, Olaf Struck (eds.), Generationenaustausch im Unternehmen, München und Mering, 123-140

Lindbeck, Assar, 2000, Pensions and Contemporary Socioeconomic Change, NBER Working Paper 7770, Cambridge/Mass.

Miles, David, 2000, Funded and Unfunded Pension Schemes: Risk, Return and Welfare, CESifo Working Paper Series No. 239, Munich

Orszag, Peter R., Joseph E. Stiglitz, 1999, Rethinking Pension Reform: Ten Myths about Social Security Systems, Paper presented at the conference on „New Ideas